Loren C. Chang （張起維）

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Education

PhD.	2006 - 2010	Aerospace Engineering Sciences	University of Colorado at Boulder	Dissertation: Migrating diurnal tide variability induced by propagating planetary waves Advisor: S.E. Palo
M.S.	2004 - 2006	Aerospace Engineering Sciences	University of Colorado at Boulder	Certificate in Atmospheric & Oceanic Sciences
B.S.	2000 - 2004	Physics	University of California at Irvine	Astrophysics specialization

Professional Experience

2023/8 -	Department Chair	
2019/8 -	Professor Deputy Director	Department of Space Science and Engineering; Center for Astronautical Physics and Engineering, National Central University, Taiwan
2015/8 - 2019/7	Associate Professor	
2012/8 - 2015/7	Assistant Professor	
2012/5 - 2012/7	Postdoctoral Research	Department of Earth Sciences, National Cheng Kung University, Taiwan
2011/4 - 2012/4	Airman (E-2), Hawk Missile Maintainance Airman (E-1), Hawk Missile Maintainance	Taiwan Air Force
2011/1 - 2011/4	Postdoctoral Research	Institute of Space Science, National Central University, Taiwan
2010/9 - 2010/12	Postdoctoral Research	Institute for Scientific Research, Boston College, MA, USA
2009/5 - 2009/8	Aerospace Engineer (GS-11) Space Scholar	Air Force Research Laboratory, MA, USA
2004/8 - 2010/8	Graduate Research Assistant	Department of Aerospace Engineering Sciences, University of Colorado at Boulder
2002/6 - 2004/5	Undergraduate Research Assistant	Department of Physics and Astronomy, University of California at Irvine

Research Interests

- Communications, Navigation, and Attitude Determination and Control Subsystems for small satellites.
- Observational and modeling studies of atmospheric wave and tidal dynamics in the mesosphere, thermosphere, and ionosphere.
- Potential teleconnections between the lower atmosphere and the middle atmosphere.
- Development of air- and space-borne platforms and instrumentation for atmospheric wave / tidal observations through inter-disciplinary scientific and engineering collaboration.
- Development of small satellite design, fabrication, testing, and operations capability for aeronomy and space physics research, as well as student education.
- Understanding upper atmospheric effects on space weather, Global Navigation Satellite Systems (GNSS), and astrodynamics in Low Earth Orbit.
- Development of spacecraft payloads to characterize the ionizing radiation space environment and its effects on electronics and biological organisms.

Teaching Experience

Instructor	NCU/SSE	Advanced Space Science I (2012 - 2016) Atmospheric Waves & Coupling (2012 - 2017) Space Physics II (2013, 2014) Vector Analysis (2014, 2015) Special Topic: Upper Air Experiments (2014) Astrodynamics (2014, 2015, 2018 - 2024) Space Mission Design I, II (2015 - 2023) Mechanics I, II (2016 - 2019) Student Service Learning (2015 - 2017, 2019) Seminar I (2020 - 2023) Satellite System Engineering (2022, 2023) Introduction to Space Science and Engineering (2023 -2024) Basics of the Satellite Communications Industry (2024)
Course Assistant	CU Boulder / AES	Radar Remote Sensing (2009)
Teaching Assistant	CU Boulder / AES	Thermodynamics & Aerodynamics (2008)

Professional Affiliations & Certifications

Member, American Geophysical Union, Asia Oceania Geosciences Society, Japan Geoscience Union.
Senior Member, American Institute of Aeronautics and Astronautics.
Member, Institute of Electrical and Electronics Engineers, Aerospace and Electronic Systems Society.
Member, Institute of Navigation.
Advisor, Taiwan Space Generation
Amateur Radio License: USA (Technician level: KC0YGM), Taiwan (Class 3: BM2NNF).

STK Level 3 Certified.

Professional Activities

2025/7	Co-Chair, Session IG22 - Space Science and Education Using Nano/microsatellite(s) Co-Chair, Session ST32 - Coupling Processes from Space to the Atmosphere and Surface: Insights from Multi-instrument Observations 22nd Annual Meeting of the Asia Oceania Geosciences Society (AOGS2025), Singapore.
2024/12	Organizer, International Workshop on Satellite Constellations and Formation Flying (IWSCFF 2024), Kaohsiung, Taiwan.
2024/7	Deputy Scientific Organizer, Session C1.4: Space Weather and Earth's Atmosphere - Ionosphere Chair, Session TGCSS.1: Small Spacecraft - Big Science Chair: PCB.2: Small Satellites for Capacity Building 2024 COSPAR General Assembly, Busan, South Korea
2024/6	Co-Chair, Session IG21: Space Science and Education Using Nano/microsatellite(s), 21st Annual Meeting of the Asia Oceania Geosciences Society (AOGS2024), Pyeongchang, Gangwon-do, South Korea.
2024/6	Organizer, International Space Industry Training Workshop, National Central University, Taiwan.
2024/6	Organizer, 9th IAGA/ICMA/SCOSTEP Workshop on Vertical Coupling in the Atmosphere-Ionosphere System (VCAIS), University of New Brunswick, Canada.
2024/5	Co-Convener, Session P-EM12 Coupling Processes in the Atmosphere-Ionosphere System, JpGU Meeting 2024, Chiba, Japan.
2024/04	Co-Chair, Special Session on COSMIC/FORMOSAT, Institute of Navigation 2024 Pacific PNT Meeting, Honolulu, HI, USA.
2023/11	Delegate and Space Technology Lead, University Academic Alliance of Taiwan - Texas Academic Exchange Group.
2023/7	Organizer, 2nd Taiwan Young Space Professionals Program
2023/7/15 - 16	Chair, Session JG03c - Remote Sensing and Modelling of the Atmosphere, A03c - Coupling Processes in the Atmosphere-Ionosphere System, 28th General Assembly, International Union of Geodesy and Geophysics, Berlin, Germany.
2023/7 -	Chair, Working Group C, Division II, International Association of Geomagnetism and Aeronomy.
2023/5	Guest Editor, Special Issue of *Advances in Space Research* on Science and Applied Research with Small Satellites.
2023/5	Co-Convener, Session P-EM12 Coupling Processes in the Atmosphere-Ionosphere System, JpGU Meeting 2023, Chiba, Japan.
2023/4	Main Scientific Organizer, Session PCB.1 - Capacity Building with Small Satellites, 2023 COSPAR Symposium, Singapore.
2023/1	Advisor, Taiwan Space Generation
2022/8	Organizer, 1st Taiwan Young Space Professionals Program

2022/6 -	Review Committee, LEO Communications User Terminal Integration and Development Subsidy, Industrial Development Bureau, Ministry of Economic Affairs, Taiwan.
2022/5	Co-Convener, Session P-EM13 Coupling Processes in the Atmosphere-Ionosphere System, JpGU-AGU Joint Meeting 2021, Online.
2022/4	Co-Chair, Special Session on COSMIC/FORMOSAT, Institute of Navigation 2022 Pacific PNT Meeting, Online.
2021/12 -	Consultant, Satellite IoT Special Interest Group, Cloud Computing and IoT Association in Taiwan.
2021/7 -	Deputy Director, Center for Astronautical and Space Physics, National Central University.
2021/7 -	International Affairs Lead, Taiwan Space Union.
2021/5	Co-Convener, Session P-EM11 Coupling Processes in the Atmosphere-Ionosphere System, JpGU-AGU Joint Meeting 2021, Online.
2020/8 -	Member, Task Group on Establishing a Constellation of Small Satellites, Committee on Space Research (COSPAR).
2019/11 -	Pillar 2 Co-Leader, Predictability of Variable Solar Terrestrial Coupling (PRESTO), Scientific Committee on Solar-Terrestrial Physics (SCOSTEP).
2019/8 -	Liaison Person, Interdivisional Commission on Space Weather, Executive Committee, International Association of Geomagnetism and Aeronomy.
2019/5	Co-Convener, Session P-EM-09: Coupling Processes in the Atmosphere-Ionosphere System, JpGU Meeting 2019, Chiba, Japan. Convener, Satellite Missions for Space Science (SS-M), 2019 Taiwan Geosciences Assembly, Taipei, Taiwan.
2019/4	Co-Chair, Special Session on COSMIC/FORMOSAT, Institute of Navigation 2019 Pacific PNT Meeting, Honolulu, HI, USA.
2018/9	Guest Editor, Special Issue on Advances in Small Satellites for Space Science, Advances in Space Research.
2018/7	Scientific Event Deputy Organizer, C2.4: Small Satellite Missions for Aeronomy and Ionospheric Studies, 2018 COSPAR General Assembly, Pasadena, CA, USA.
2018/6	Co-Convener, Session ST-04: Mesosphere-Thermosphere-Ionosphere Coupling Processes, Asia Oceania Geosciences Society 2018 Annual Meeting, Honolulu, HI, USA.
2018/5	Co-Convener, Session P-EM-10: Coupling Processes in the Atmosphere-Ionosphere System, JpGU Meeting 2018, Chiba, Japan.
2017/12 - 2020/12	Proposal Reviewer (複審委員), Atmospheric Sciences Section, Taiwan Ministry of Science and Technology (大氣科學學門複審委員).
2017/10	Member, SCOSTEP Next Scientific Program Committee.
2017/9	Convener, Session 6-2: Education and Capacity Building in Science and Engineering Using Small Satellites, 2017 COSPAR Symposium, Jeju, South Korea.
2017/6 - 2019/10	International Representative, CEDAR Science Steering Committee.

2017/5	Convener, Session P-EM-11 Mesosphere-Thermosphere-Ionosphere Coupling in the Earth's Atmosphere, JpGU-AGU Joint Meeting 2017, Chiba, Japan.
2017/3	Guest Editor, Special Edition on Vertical Coupling, Journal of Atmospheric and Solar-Terrestrial Physics.
2016/7	Organizer, 1st INSPIRE (International Satellite Program in Research and Education) Workshop
2016/7	Scientific Committee Member and Local Organizer, 6th IAGA/ICMA/SCOSTEP Workshop on Vertical Coupling in the Atmosphere-Ionosphere System
2016/5	Co-Convener, Session P-EM-03 Mesosphere-Thermosphere-Ionosphere Coupling in the Earth's Atmosphere, JpGU-AGU Joint Meeting 2016, Chiba, Japan.
2015/12 -	Taiwan National Committee Member, International Association of Geomagnetism and Aeronomy (IAGA)
2015/7 - 8	Co-Convener, Session ST-05-20-29: Coupling processes in the mesosphere-thermosphere-ionosphere (MTI) system, Asia Oceania Geosciences Society 2015 Annual Meeting, Singapore.
2015/6	Convener, session on Understanding Dynamical and Chemical Coupling from Tides, Planetary and Gravity Waves, 2015 CEDAR Workshop. Boulder, CO, USA.
2014/7 - 8	Co-Convener, Session ST-02: Coupling processes in the mesosphere-thermosphere-ionosphere (MTI) system, Asia Oceania Geosciences Society 2014 Annual Meeting, Sapporo, Japan.
2013/7	Convener, Workshop on Whole Atmosphere Coupling During Solar Cycle 24, NCU, Taiwan.
2013/6	Co-Convener, session on Planetary waves and Tides in the middle atmosphere and ionosphere, 2013 CEDAR Workshop. Boulder, CO, USA.
2012-2013	Faculty advisor, Taiwan International Science Fair, Taiwan National Science Fair.

Students Advised

Student	*Dates Advised*	*Degree*	*Post Graduation Career*
Pei-Yun Chiu 邱珮芸	2012 - 2018	B.S. M.S., National Central University	Digital Globe
Shih-Han Chien 簡士涵	2013 - 2015	M.S., National Central University	Research Alternative Service, Central Weather Bureau
Yi-Chung Chiu 邱奕中	2013 - 2023	B.S., M.S., Ph.D., National Central University	Postdoc, National Central University
Jack Chieh Wang 王傑	2013 - 2016	B.S., M.S., National Central University	PhD. student. Aerospace Engineering Sciences, University of Colorado Research Scientist: NASA Goddard Space Flight Center
Yi Duann 段儀	2014 - 2023	B.S., M.S., PhD., National Central University	Postdoc, National Central University
Cornelius Jude Salinas	2014 - 2018	PhD., National Central University	Research Scientist: NASA Goddard Space Flight Center

Rur-Chin Lai 賴日勤	2015 - 2016	M.S., National Central University	China Airlines
Lin-Rong Tsai 蔡林融	2016 - 2018	M.S., National Central University	National Chung Shan Institute of Science & Technology
Kevin Su-Chi Chiu 邱思齊	2016 - 2018	M.S., National Central University	
Wei-Hao Luo 羅偉豪	2017 - 2020	M.S., National Central University	Industrial Technology Research Institute
Edward Chi-Ting Liao 廖啟珽	2017 - 2020	B.S., M.S., National Central University	Aerospace Industry Development Corporation
Ethan Tai 戴子雅	2017 - 2022	M.S., National Central University	
Glenn Franco Gacal	2019 - 2022	M.S., National Central University	Philippine Space Agency
Iris Tsai-Ru Yu 游采如	2019 -	B.S., M.S., National Central University	
Owen Kai-Lun Cheng 鄭凱倫	2019 - 2022	B.S., M.S., National Central University	Industrial Technology Research Institute
Jesse Guan-Po Chiu 邱冠博	2019 - 2021	B.S., M.S., National Central University	PhD., University of Michigan
Joanne Pin-An Lin 林品安	2019 - 2022	M.S., National Central University	Industrial Technology Research Institute
Sittinat Denduonghatai	2019 - 2021	M.S., National Central University	National Astronomical Research Institute, Thailand
Wilson Hsieh 謝岳均	2019 - 2022	M.S., National Central University	National Chung Shan Institute of Science & Technology
Sherry Tu 涂欣怡	2019 - 2023	M.S., National Central University	Industrial Technology Research Institute
Ruo-Yu Wang 王若宇	2019 - 2023	M.S., National Central University	Industrial Technology Research Institute
Kai-Chieh Hou 侯凱傑	2020 - 2023	M.S., National Central University	Industrial Technology Research Institute
Binson Lee 李實斌	2020 - present	PhD., National Central University	

Wei-Yi Lin 林韋邑	2020 - 2024	M.S., National Central University	TensorTech Inc.
Jose Genes	2020 - 2022	M.S., National Central University	
Yu-Shun Wang 王鈺順	2020 - 2024	B.S., M.S., National Central University	Intern, Tron Future Inc.
Simon Tien 田宇修	2021 - present	M.S., National Central University	
Yi-Hsuen Chou 周宜萱	2021 - present	B.S., M.S., National Central University	
Jen-Siang Lin 林楨翔	2021 - present	B.S., National Central University	
Joyce Chou 周慈萱	2022 - 2024	M.S., National Central University	Gran Systems Inc.
I Chen 陳藝	2022 - present	M.S., National Central University	
Jackson Tzu-Wei Hong 洪梓惟	2022 - present	M.S., National Central University	
Ingrid Hui-Hui Chou 周徽徽	2022 - 2024	B.S., National Central University	M.S., Institut Supérieur de l'Aéronautique et de l’Espace
Roger Tsai 蔡志群	2022 - present	B.S., M.S., National Central University	
Shao Yu You 尤紹宇	2023 - present	B.S., National Central University	
Jacy Yi-Yu Chang 張以侑	2023 - present	B.S., M.S., National Central University	
Chieh Lung 龍潔	2023 - present	B.S., M.S., National Central University	
黃俞臻	2023 - present	B.S., National Central University	
Sin Yu Tsui 崔馨予	2023 - present	B.S., National Central University	
Terry Chen 陳睿廷	2023 - present	B.S., M.S., National Central University	
黃柔芸	2023 - present	B.S., National Central University	

林義昊	2024 - present	B.S., National Central University

Grants

101-2111-M-008-021-MY2, Tidal and Planetary Wave Variability in the Middle Atmosphere and Ionosphere	2012/10 - 2014/7	Taiwan NSC	PI
102-2119-M-006-007, Observations and Theoretical Modeling of the Ionosphere Midlatitude Summer Nighttime Anomaly using FORMOSAT-3/COSMIC	2013/8 - 2014/7	Taiwan NSC	Co-I
102-2119-M-006 -011, Observations of Vertical Ionospheric Disturbances Due to Volcanic Eruptions and Geomagnetic Storms using FORMOSAT-3/COSMIC	2013/8 - 2014/7	Taiwan NSC	Co-I
103-2111-M-008 -019 -MY3 Impact and mechanisms of middle atmosphere QBO and background wind changes on the upper atmosphere	2014/8 - 2017/7	Taiwan MOST	PI
NSPO-S-103127 Topside Ionospheric Plasma Temperatures	2014/8 - 2015/8	Taiwan NSPO	PI
NSPO-S-104163 Feasibility Study for a CubeSat Observational Platform of the Middle & Upper Atmosphere	2015/10 - 2016-10	Taiwan NSPO	PI
105-2111-M-008 -001 -MY3 International CubeSat Mission Development and Operations for Upper Atmospheric Payloads	2016/8 - 2019/7	Taiwan MOST	PI
NSPO-105R-00178 Accelerometer calibration system	2016/9 – 2016/12	Taiwan NSPO	PI
NSPO-S-106059 NSPO Quality Assurance and Calibration Technology Research	2017/4 – 2017/11	Taiwan NSPO	PI
NSPO-S-106035 CubeSat Platform for Ionospheric Science and Flight Dynamics	2017/4 - 2020/4	Taiwan NSPO	Co-I
106-2111-M-008-010 Climatological Effects on the Thermosphere and Ionosphere through variations in Eddy Diffusion	2017/8 - 2018/7	Taiwan MOST	PI
107-2923-M-008 -001 -MY3 Taiwan-Russia Joint Project: Empirical, assimilation and first-principal ionospheric modeling for prediction and investigation of space weather using innovative observations	2018/1 - 2020/12	Taiwan MOST	PI

107-2111-M-008 -002 -MY3 Understanding GNSS scintillation variability and triggers through satellite and ground based measurements	2018/8 - 2021/7	Taiwan MOST	PI
NSPO-S-107089 Development and Analysis of Attitude Control and Orbit Propagation Techniques	2018/5 - 2019/5	Taiwan NSPO	PI
108-2636-M-008-002 109-2636-M-008-004 110-2636-M-008-002 111-2636-M-008-004 112-2636-M-008-003 Scientific Exploration, Systems Development, and Resource Utilization of Very Low Earth Orbit	2019/2 - 2024/1	Taiwan MOST	PI
11015030 Research and Development of a Low Earth Orbit Communications System	2021/05 - 2021/12	Taiwan Industrial Technology Research Institute	PI
NSPO-S-110202 On the feasibility of executing a GNSS-RO / R mission using a constellation of small satellites / CubeSats	2021/07 - 2022/05	Taiwan NSPO	PI
110-2923-M-008 -005 -MY3 Monitoring and Modeling of Space Weather Phenomena and Effects Using Novel Satellite Observations	2021/10 - 2024/09	Taiwan MOST	Co-I
11010078 Special Project on Analysis and Research of Testing Standards and Procedures for Low Earth Orbit Satellites 「軌道衛星驗測標準與程序分析研究」專案	2021/12	Taiwan Industrial Technology Research Institute	PI
11110042 Preliminary Design Review, Critical Design Review, and Test Readiness Review for a Low Earth Orbit Satellite Communication System 低軌衛星通訊系統之初步設計審查(PDR) 、關鍵設計審查(CDR) 、測試備便審查(TRR)委託研究案	2022/04 - 2023/12	Taiwan Industrial Technology Research Institute	PI
NSPO-S-111277 台灣太空事務青年人才選訓計畫 Taiwan Young Space Professionals Program	2022/6 - 2022/12	Taiwan NSPO	PI
NSPO-S-111411 TASA-S-1120237 快速飛試立方衛星備援操作可行性研究 Feasibility of Rapid Implementation of Redundant CubeSat Operations	2022/8 - 2022/12 2023/4 - 2023/12	Taiwan NSPO Taiwan Space Agency	PI
11210040 CubeSat Attitude Validation Project for a Space-grade Fiber Optic Gyroscope 太空光纖陀螺儀立方衛星定向驗證計畫	2023/08 - 2025/07	Aegiverse Co., Ltd.	PI

TASA-S-1120162 台灣太空事務青年人才選訓計畫 Taiwan Young Space Professionals Program	2023/5 - 2023/12	Taiwan Space Agency	PI
11315026 Training Program for a CubeSat Platform for Hyperspectral Imaging 立方衛星高光譜遙測平台訓練計畫	2024/01 - 2025/08	Wistron Corporation	PI
NSTC 113-2111-M-008-007 Monitoring the Low Earth Orbit Space Environment Effects on Orbits, Positioning, and Ionizing Radiation	2024/2 - 2026/1	Taiwan NSTC	PI
NSTC 113-2622-M-008-003 Development and verification of a modular attitude determination and control subsystem	2024/11 - 2025/10	Taiwan NSTC Tensor Tech Co, Ltd.	PI

Honors & Awards

2024/9	Future Technology Award (未來科技獎), National Science and Technology Council
2023/2	Distinguished Professorship, National Central University.
2021/8	Future Technology Award (未來科技獎), Taiwan Ministry of Science and Technology
2020/9	Distinguished Professorship, National Central University.
2019/3	Young Scholar Fellowship, Taiwan Ministry of Science and Technology
2018/7	Zeldovich Medal, COSPAR Commission C.
2018, 2016	NCU Outstanding Research Award
2017/6	Academia Sinica Research Award for Junior Research Investigators (中研院年輕學者著作獎), Division of Mathematics and Physical Sciences.
2015/10	Ta-You Wu Memorial Award (吳大猷紀念獎), Taiwan Ministry of Science and Technology
2013/9	Young Scientist Award, Asia Pacific Radio Science Conference
2013/8	NCU New Faculty Outstanding Teaching and Research Award
2010/6	1st place, MLT Section, CEDAR Workshop Student Poster Competition. (Finalist in 2005, 2008, 2009).
2009	Space Scholar, Air Force Research Laboratory
2006	Honorable Mention, NASA Graduate Student Researchers Program
2004	Departmental Honors in Physics, UC Irvine.
2003/6	Sigma Pi Sigma (National Physics Honor Society)

Spacecraft Missions and Payloads

INSPIRESat-1 *9U Small Satellite*	2017 - ongoing Launch: February 2022	International Collaboration (USA, India,	Co-I

IDEASSat (飛鼠號) *3U CubeSat*	2017 - 2021 Launch: January 2021	Taiwan NSPO, MOST, MOE	Co-I Systems Engineering Lead
ARCADE / INSPIRESat-4 *27U Small Satellite*	2018 - 2023 Launch: June 2023	International Collaboration (Singapore, Taiwan, Germany)	Co-I
ILITE *3U CubeSat*	2021 - ongoing	Taiwan MOST, MOE	PI
SCION-X / INSPIRESat-6 *12U CubeSat*	2019 - ongoing	Taiwan MOST, MOE, Wistron Corp.	PI
Deep Space Radiation Probe *Lunar payload*	2021 - ongoing	NCU, Taiwan NSTC, MOE	PI
SAISI *3U CubeSat*	2022 - ongoing	NCU, Taiwan MOE	PI
Koyo *3U CubeSat*	2023 - ongoing	Aegiverse, Hex20	PI
COSPAR-1 *3U CubeSat*	2024 - ongoing	International Collaboration (USA, France, Taiwan, Peru)	Co-I

Selected Conference Presentations

1. **Chang, L.C.** (2012, June), Introduction to waves and tides, Invited Tutorial at the 2012 CEDAR Student Workshop, Santa Fe, NM, USA.
2. **Chang, L.C.**, S.E. Palo, and H.-L. Liu (2012, June), Short term variability in the migrating diurnal tide caused by interactions with the quasi 2 day wave, Oral Presentation at the 2012 CEDAR Workshop on MLT and thermosphere response to large scale wave activity. Santa Fe, NM, USA.
3. **Chang, L.C.**, C.H. Lin, and J.Y. Liu (2012, June), Inter- and Intra- Annual Variability of Tidal Components Observed in FORMOSAT-3 / COSMIC TECs, 2007-2011, Poster Presentation at the 2012 CEDAR Workshop, Santa Fe, NM, USA.
4. **Chang, L.C.**, S.E. Palo, F. Herrero, M. Pilinski, K. Kemble, C.K. Chao, G. Crowley (2012, November), An Instrument Suite for Neutral and Ion Drifts, Equivalent Temperatures, and Composition, Oral Presentation at the 2012 COSMIC Workshop, Boulder, CO, USA.
5. **Chang, L.C.**, C.-H. Lin, J.-Y. Liu, B. Nanan, J. Yue, and J.-T. Lin (2013, May), Seasonal and Local Time Variation of Ionospheric Migrating Tides in 2007-2011 FORMOSAT-3/COSMIC and TIE-GCM Total Electron Content, Invited Oral Presentation at the 2013 Japan Geoscience Union Meeting, Chiba, Japan.
6. **Chang, L.C.**, J. Yue, W. Wang, Q. Wu, R.R. Meier (2014, July), Quasi-two day wave related variability in the background dynamics and composition of the mesosphere / thermosphere, and the ionosphere, Oral Presentation at the 2014 Asia Oceania Geosciences Society Annual Meeting, Sapporo, Japan.
7. **Chang, L.C.**, J. Yue, W. Wang, Q. Wu, R.R. Meier (2015, April), Quasi-two day wave related variability in the background dynamics and composition of the mesosphere / thermosphere, and the ionosphere, Invited Oral Presentation at the 2015 European Geosciences Union General Meeting, Vienna, Austria.
8. **Chang, L.C.**, J. Salinas, J.C. Wang, J.Y. Su, D. Yi, J. Hong, Y.C. Chiu, S.C.R. Chen, A. Chandran, M. McGrath, D. Fritts, L. Gordley, and J. Fisher (2016, August), A Preliminary Design for the INSPIRESat-1 Mission and Satellite Bus: Exploring the Middle and Upper Atmosphere with CubeSats, Oral Presentation at the AIAA/USU Conference

on Small Satellites, LEO Missions, SSC16-WK-02, Logan, UT, USA. http://digitalcommons.usu.edu/smallsat/2016/S4LEOMis/5/.

9. **Chang, L.C.**, C.-K. Chao, A. Chandran, C.-L. Kuo (2018, August), IDEASSat – A 3U CubeSat for Ionospheric Science and Capacity Building, Invited Oral Presentation at the 2018 Asia Oceania Geosciences Society Annual Meeting, Honolulu, Hawaii, USA.
10. **Chang, L.C.** (2024, July), The Deep Space Radiation Probe: Development of a First Lunar Science Payload for Space Environment Studies and Capacity Building, Invited Oral Presentation at the 2024 COSPAR General Assembly, Busan, South Korea.

Selected Seminars

1. “Introduction to Middle Atmosphere Dynamics”, National Taiwan University, Taipei, Taiwan, January 15, 2014.
2. “Dynamics and Coupling in the Middle and Upper Atmosphere - Case Studies of the Quasi-Two Day Wave”, National Taiwan University, Taipei, Taiwan, May 13, 2014.
3. “The Quasi-Two Day Wave in the Middle and Upper Atmosphere”, Kyushu University, Fukuoka, Japan, July 23, 2014.
4. “The Middle and Upper Atmosphere: Effects on Environment and Space Operations”, National Defense University, Taoyuan, Taiwan, November 27, 2015.
5. “Space Situational Awareness: Introduction and Recent Developments”, National Defense University, Taoyuan, Taiwan, December 2, 2016.
6. “Exploring the Edge of Space: The Upper Atmosphere and its Implications for Spaceflight and Technology”, Nanyang Technological University, Singapore, September 7, 2018.
7. “IDEASSat: Lessons learned from a first university small satellite mission and the road ahead”, National Chung Cheng University, Taiwan, December 22, 2021.
8. 「對天說話：衛星通訊的演變與人造衛星微型化」/ “Talking to the Stars: Advances in Satellite Communications and the Miniaturization of Satellites”, 探索基礎科學系列講座 / Seminars on Exploring Basic Science, National Taiwan University, June 3, 2023.
9. “Anomalies are Normal: Our Experiences Building Spaceflight Capacity at National Central University”, RISH Atmospheric Science Seminar, Kyoto University, Japan, June 16, 2023.
10. “Developing Hands On Space Education and Spaceflight Capacity Building at National Central University”, Kyushu University, Fukuoka, Japan, December 5, 2023.
11. “Tides and Planetary Waves”, 9th IAGA/ICMA/SCOSTEP Workshop on Vertical Coupling in the Atmosphere-Ionosphere System (VCAIS), University of New Brunswick, Canada, June 6, 2024.
12. “The Deep Space Radiation Probe: Development of a First Lunar Science Payload for Space Environment Studies and Capacity Building”, National Defense University, Taiwan, March 1, 2024.

Peer-Reviewed Journal Publications (* corresponding author)

1. **Chang, L.***, S. Palo, M. Hagan, J. Richter, R. Garcia, D. Riggin, D. Fritts (2008), Structure of the migrating diurnal tide in the Whole Atmosphere Community Climate Model (WACCM), *Adv. Space Res.*, 41, doi:10.1016/j.asr.2007.03.035
2. **Chang, L.C.***, S.E. Palo, and H.-L. Liu (2009), Short-term variation of the s=1 nonmigrating semidiurnal tide during the 2002 stratosphere sudden warming, *J. Geophys. Res.*, 114, doi:10.1029/2008JD010886
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